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ABSTRACT

The development of the Home and Family Questionnaire (HFQ) is described and exploratory factor analyses and initial reliability studies are reported. The HFQ, which incorporates many of the items from the HOME Observation Inventory for Elementary School Children developed by B. M. Caldwell and R. H. Bradley (1984), evaluates home setting and home process. The HFQ uses a self-administered questionnaire format that may be administered through the mail or in the experimenter's laboratory. In addition, the HFQ addresses the lack of congruence with ecological systems theory of the HOME instrument. Fifty families of third graders participated in the initial stages of instrument development. Reliability estimates were calculated for scores obtained in each of two presentation modes, and exploratory factor analyses were conducted on individual item scores. Reliability was higher (Cronbach's alpha of 0.79) with laboratory administration. The factor solution remained ambiguous, but trends consistent with the hypothesized subscales were observed. Four tables illustrated study findings. (Contains eight references.) (SLD)

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The Development of the *Home and Family Questionnaire:* Exploratory Factor Analyses & Initial Reliability Estimates

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Abstract

In recent studies examining home experiences of young school-age children, one of the most widely used instruments is the HOME Observation-Inventory for Elementary School Children (Caldwell & Bradley, 1984), an instrument that requires home visits. Although data obtained with the HOME tends to be reliably predictive of developmental outcomes, use of the HOME presents 2 disadvantages: 1) on-site, observational data is time-consuming and expensive to collect, and 2) the instrument is not configured to examine the home environment in a manner consistent with recent ecological approaches to development.

The present study involved the development of the Home-and-Family Questionnaire (HFQ), an instrument that incorporates many of the items from the HOME, as well as additional items suggested by theory and field experience, in a self-administered questionnaire format. Unlike the HOME (high time expense), the HFQ may be administered either as a mail-out questionnaire (low time expense), or administered with experimenter oversight at a central location (moderate time expense).

The HFQ also addresses the HOME's lack of congruence with ecological systems theory. In ecological systems theory (Bronfenbrenner, 1994 in draft) *environment* includes both *setting* (persons, objects, symbols, and activities that exist in the child's immediate environment even when the child is absent) and *process* (an interaction between the child and the immediate surroundings of persons, objects and symbols). The HFQ is constructed to measure separately home setting and home process.

Fifty families of 3rd-graders participated in the initial stage of instrument development reported here. Reliability estimates were calculated for scores obtained in each of two presentation-modes, and exploratory factor analyses were conducted on individual item scores.

The Development of the *Home and Family Questionnaire*:
Exploratory Factor Analyses & Initial Reliability Estimates

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Preliminary Work

* Data originally collected with the elementary-school version of the HOME (Caldwell & Bradley, 1984) and clustered into the HOME's 8 subscales (Pierce & Lange, 1995 under review), were reclustered for exploratory purposes into 11 subscales following the arguments of Bronfenbrenner's (1994 in draft) ecological systems theory.

  In Bronfenbrenner's person-process-context-time (ppct) model of development, the environment includes both *context* (enduring elements of the environment) and *process* (interactions between the developing organism and the enduring elements of the environment). We have chosen to use the term *setting*, rather than *context*, to convey more explicitly the differentiation between the static nature of *setting* (context) and the dynamic nature of *process*. Thus in the present report, home environment includes both ***home setting*** and ***home process***:

  Home Setting: enduring elements of the home environment that remain even when the child is absent (eg, parents, books)

  Home Process: interactions between the child and the enduring elements of the home setting; requires the child's presence (eg, discipline, reading)

* Each of the 59 items on the elementary-school version of the HOME was examined and the researchers determined if the item measured home setting or home process, according to the above criteria. Data from the original study (Pierce & Lange, 1995 under review) were thus reclustered into 11 subscales:

  Responsivity-process
  Responsivity-setting

  Emotional Climate-process
  Emotional Climate-setting

  Materials-process
  Materials-setting

  Active Stimulation-process
  Active Stimulation-setting

  Family Participation-process

Physical Environment-setting
Paternal Involvement-setting

* The initial factor analysis conducted on the 11 subscales yielded a 3 factor solution: Factors 1 and 2 were unambiguous (Factor 1 containing three Process subscales and Factor 2 containing four Setting subscales). Factor 3 was ambiguous and it was determined to omit Paternal Involvement-setting from the subsequent analysis.

* The subsequent factor analysis on the 10 subscales yielded a clean 3-factor solution:

	Factor 1 Out-of-home Experiences	Factor 2 Home Process	Factor 3 Home Setting
Subscales			
Active Stimulation-process	**0.80**	0.15	0.19
Family Participation-process	**0.79**	0.02	0.11
Active Stimulation-setting	**0.72**	0.28	0.14
Emotional Climate-process	0.05	**0.76**	0.06
Responsivity-process	0.16	**0.70**	0.34
Materials-process	0.26	**0.66**	0.13
Emotional Climate-setting	0.07	**0.51**	0.34
Responsivity-setting	0.04	0.00	**0.88**
Materials-setting	0.35	0.27	**0.68**
Physical Environment-setting	0.33	0.38	**0.65**
variance accounted for	34 %	34 %	32 %

* The Home & Family Questionnaire (HFQ) was constructed, including most of the items from the HOME and others suggested by field experience. Additionally, we included items to assess demographic information and childcare arrangements.

Items were written to measure separately *home setting* and *home process*. In many instances, original items from the HOME measured both. For example, in the elementary-school version of the HOME's Subscale IV: Growth Fostering Materials & Experiences, Item 28 is "Child has free access to at least ten appropriate books." We reasoned that having books in the home (setting) and actually reading books (process) are different phenomena, and thus Item 28 would be represented on the HFQ by two separate items, one assessing setting and a second assessing process.

* Informal pilot tests were conducted to determine the readability and time requirements for the administration of the HFQ. Volunteer subjects were parents of young children and colleagues experienced in questionnaire construction and administration.

* The final format of the HFQ examined in the present study included 198 items (excluding demographic information): 155 items on a 4-point Likert-type scale ranging from *never* to *a lot*; 9 items on a 4-point Likert-type scale ranging from *strongly disagree* to *strongly agree*; 22 items using a yes-no alternative; and 12 open-ended items.

Objectives of the Present Study

1. Assess reliability of measurements obtained with the HFQ.

2. Verify predicted subscales of the HFQ:

   (1) Home setting
   (2) Home process
   (3) Out-of-home experiences

Design

Parents in subject families completed the HFQ in two presentation-modes separated by approximately one week:

* as a mail-out questionnaire completed at home and returned by mail; and

* with experimenter oversight at the experimenter's lab.

Families were randomly assigned to one of two groups, differing only in the sequence of the two presentation-modes.

Subjects

Thus far, subjects in the present study include 50 white 3rd-graders and their families, 25 boys and 25 girls.

Ages range from 93 to 113 months ($\bar{x}$ = 103, sd = 5.1). SES levels 3, 4, and 5 (Hollingshead, 1975) are represented. The children come from 19 Roman Catholic and independent elementary schools in the Deep South.

	SES levels			total
	3	4	5	
boys	0	9	16	25
girls	3	11	11	25
total	3	20	27	50

Note: The number of subjects and lack of SES or ethnic diversity is a serous shortcoming of the reported study. Our target sample is n=200, and we are presently continuing to gather data from a wider range of SES levels and ethnic groups from the public school and Catholic school systems.

Analyses & Results

Scores for 30 items were not included in the analyses reported here: 22 items that asked about child care arrangements, 6 open-ended items that we have not yet scored, and 2 items that had no variance. Scores for each of the remaining 168 items were standardized (internal standardization) before reliability estimates and factor analyses were conducted.

Reliability

Reliability was assessed using the internal consistency method, that is Cronbach's alpha (Cronbach, 1971).

Presentation-mode of HFQ	Cronbach's alpha
at home	.67
at experimenter's lab	.79

At this point, scores obtained with the questionnaire administered at the experimenter's lab with experimenter oversight appears the more reliable. If the mail-out questionnaire fails to achieve a more desirable reliability estimate (we would like to see .80), the questionnaire administered at the experimenter's lab nevertheless offers a much more economical alternative to instruments requiring in-home observations.

Predicted subscales

An initial verification of the three predicted subscales was conducted using exploratory factor analyses. At the present time there are fewer subjects (n=50) than items (168). In order to conduct preliminary exploratory factor analyses, the scores for each presentation-mode (i.e., the scores for the questionnaire completed at home, n=50, and for the questionnaire completed at the experimenter's lab, n=50) were entered separately (n=100) and doubled (n=200).

First exploratory factor analysis:

* 168 items yielded 46 factors with an EigenValue greater than 1.0, explaining 88.8 % of the variance.

Second exploratory factor analysis:

* 8 items with weak factor loadings (>.30) on the first factor analysis were omitted.

* 21 items that compose the theoretical warmth subscale were omitted.

* 62 items were clustered into 17 composites based on the results of the first factor analysis.

* Results: the 94 items yielded 32 factors with an EigenValue greater than 1.0, explaining 83% of the variance.

Although the factor solution at this point remains ambiguous, trends consistent with hypothesized subscales were observed. Twenty-five of the 32 factors extracted thus far can be clustered into seven composites that roughly represent the following seven theoretical constructs (the number of factors in each composite is given in parentheses):

Construct (number of factors in parentheses)	% variance	Predicted subscale
1. Responsibility (7)	18.5	Process
2. Structure/routine (5)	13.5	Process

(table continued on next page)

Construct (number of factors in parentheses)	% variance	Predicted subscale
3. Physical environment	12.2	Setting
4. Use of materials (2)	8.4	Process
5. Literacy encouragement (2)	5.6	Process
6. Access to materials (2)	3.8	Setting
7. Out-of-home experiences (2)	3.2	Out-of-home exps.
Ambiguous (7)	17.7	
Total (32 factors)	82.9	

What Next?

* We are continuing to collect data from an enlarged sample (target n=200) that includes minorities, public school populations, and a wider range of SES levels.

* When data collection from the larger sample is complete, we will

1. conduct exploratory factor analyses on the enlarged data set;

2. conduct confirmatory factor analyses to test our hypothesized 3-factor solution; and

3. use the test-retest method to examine the reliability of individual items.

For validity purposes, we are gathering cognitive measures from the children in the present study. Each third-grader accompanied the parent to the experimenter-guided session and was administered two study-recall tasks by a second experimenter. Experimenter #2 recorded evidence of the child's use of study strategies, the number of items recalled, and recall organization. Additionally, we are collecting the children's grade-point averages and achievement test scores from the schools. Thus, when data collection from the larger sample is complete, we will also

4. examine the predictive validity of the measurements obtained with the HFQ by examining specified correlations (Carmines & Zeller, 1979).

    * First, we will calculate correlations between the measures of the children's home environments assessed with the HFQ and the children's memory-task measures, that is, their strategy-use and item recall.

* Second, we will compare the correlations obtained in the first step with the correlations obtained in previous studies (Pierce, 1994a; 1994b; Pierce & Lange, 1995 under review) between the measures of the children's home environments assessed with the elementary-school version of the HOME and the same memory-task measures (strategy-use and recall).

* Third, we will examine the power of the measures obtained with the HFQ to predict the children's grade-point averages and achievement test scores.

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